Ueber einige Veränderungen welche Gehörshallucinationen unter dem Einflusse des galvanischen Stromes erleiden. Von FRANZ FISCHER. Arch. f. Psychiatrie, 1887, p. 75.

Jolly, Erlenmeyer and others have recorded cases in which electrical stimulation of the acusticus caused, not a simple sensation of sound, but an auditory hallucination which Jolly thought to be reflex. Since then a closer relationship than was before suspected is held to exist between noises in the ear and auditory hallucinations. Fischer here describes two noteworthy cases in which the galvanic current applied to the central organs caused a change which favored the cessation of auditory hallucinations. The intensification of these hallucinations by chewing, by food (which was therefore refused), the amelioration of them by stopping the ears, the hyperkusia that attended their intensification, and the auditory obtuseness that marked their decline, all point to the same close relationship. Galvanization, it is inferred, however, intensifies psychic excitation unless it is applied when it has already begun to abate, when it is beneficial.

Experimentelle Untersuchungen zur Physiologie des Geruchs. Von ED. ARONSOHN. Archiv f. Anatomie u. Physiologie, III u. IV Heft, 1886, pp. 321–57.

These experiments were made under the direction of Professor Kronecker, and seem well calculated to allay the unusual distrust so commonly felt for subjective sensations in this particular field. On the basis of the old experiments of Tourtual and E. H. Weber, most text-books in physiology state that only gases and vapors, and not fluids, brought into contact with the olfactory organs, can excite the sense of smell. Solutions of salt, wormwood, dilute sulphuric acid, and cologne had been introduced into the nasal cavity. Valentin, and still more recently Vintschgau, after further experimentation, also reached the conclusion that only substances suspended in the air could be smelled. Yet the olfactory organs are covered by a layer of mucous secretion. The common view that fish not only have olfactory organs but use them was further tested by the author as follows: Ant eggs, a favorite food of gold fish, were saturated with clove oil or asafœtida and thrown into a tank, and approached but refused without being touched within several millimetres by the fish. By using a ⊥ tube the author introduced into his own nose solutions of camphor, clove oil, cologne and other substances, with special precaution to avoid injurious degrees of concentration and temperature, and found them distinctly odorous for some time and in more than 100 experiments. A temperature of 40°–44° C. gave best results. Such statements as Kant's, that "smell is taste acting at a distance," or Cloquet's, that "smell is to air as gustatory solutions are to fluids," must therefore stand corrected.

By further experiments it was found that a rinsing solution of about 0.73 per cent solution of salt was most favorable as an indifferent fluid to keep the function of the olfactory organs intact. Reckoning from this as a basis or unity, solutions of other salts of equally favorable degree of concentration were carefully determined and named "osmoteric equivalents." Thus salt has the smallest osmoteric equivalent of the chief fluids of the body. Of the other elements of blood serum, bicarbonate of soda has an osmoteric

equivalent of 2, sulphate of soda 4, phosphate of soda and magnesium sulphate 6. The sensory effects of mixtures of these salt solutions can be correctly calculated on the bases of these equivalents. They have thus their own smell, though they have before been considered odorless.

With the kathode in the nose the author had a distinct sensation of smell in opening an electric circuit, and with the anode in the nose by closing it. In opposition to Bidder it was also found that fragrant substances taken into the mouth and expelled through the choana were distinctly smelled, and it is inferred with Paulsen that the exspiratory and inspiratory current of air take substantially the same course through the nose. Fatigue soon blunts and almost arrests the sense of smell, but it fully recovers its degree of sensitiveness, but not its power of endurance, in a few minutes. Entire exhaustion from one odor leaves the organs of smell with maximal sensitiveness for other odors. Thus the law of specific energy seems to hold for various olfactory fibres or systems of fibres. This fact would seem to give a method by which the much disputed problem of a classification of smells could be solved. But it is needful that experiments be made with chemical substances of known composition. Chemists differ widely respecting the smell of some even of the more common objects, and of many others the text-books do not state whether they smell or not. Only four elements, chlorine, bromine, iodine, and phosphorus, smell. These seem to the author to be odorless in a pure state, and he concludes that all elements are odorless. There are few more vague terms in the psychology of sensation than those designating odorous qualities, and the need of a more chemically scientific nomenclature is greatly felt. Smells were located by the author and others whom he tested not in but before the nose. One of his subjects had a very vivid dream of experimenting with camphor which seemed to be very distinctly smelled. The author finally queries whether the movement of many odorous substances on the surface of water is connected with the ciliary epithelium which Waldeyer lately found over the olfactory region. It seems especially to be hoped that the capacities of the fatigue method of classifying odors will soon be more fully tested.

Note on the Specific Energy of the Nerves of Taste. Studies from the Biological Laboratory of the Johns Hopkins University, Vol. IV, No. I. By W. H. Howell, Ph. D., and J. H. Kastle, S. B.

A chemically pure substance, named para-brom-benzoic sulphinide (formula $C_6H_8Br \begin{cases} CO \\ SO_2 \end{cases} > NH$), first made in the chemical laboratory of this University, and a derivative of the new substitute for sugar called saccharine, was found to cause very intense and pure gustatory sensations of bitter when applied to the back part of the tongue (region of the circumvallate papillae) and a sweet taste when applied to the tip and borders of the anterior half of the tongue. The latter sensation was much feebler, sometimes reported as slightly acid or metallic sweet or slightly astringent. In a few of the twenty persons tested the sensation on the lip was at first slightly bitter, then sweet, which does not accord with the reaction time experiments of Vintschgau, which showed sweet much quicker than bitter. Saccharine itself on the back of the tongue caused in some persons a rapid alternation of the sensations of sweet and